

Effect Of Weight Training on Right Back Shooting Ability of Handball Players

Dilip Dattataryao Bhadke

Vai. Dhunda Maharaj Deglurkar College Degloor

Abstract: The present study aimed to examine the effect of weight training on the shooting ability of handball players. A total of 100 male handball players aged between 14–19 years were selected and divided into two groups: an experimental group (n=50) and a control group (n=50). The experimental group underwent a structured 12-week weight training program, while the control group did not receive any specialized training. Pre- and post-tests were conducted to assess shooting ability with respect to the right back position.

Descriptive statistics such as mean and standard deviation were calculated, and Analysis of Covariance (ANCOVA) was used to determine the significance of differences between groups at the 0.05 level. The results indicated a slight improvement in the control group (pre-test mean = 3.11; post-test mean = 3.15), whereas the experimental group showed a notable increase (pre-test mean = 3.13; post-test mean = 3.32). The ANCOVA results revealed a statistically significant effect of weight training on shooting ability.

The findings suggest that weight training significantly enhances shooting performance in handball players by improving muscular strength and coordination. It is concluded that incorporating structured strength training into regular practice can improve sport-specific skills such as shooting accuracy and power.

Keywords: Weight Training, Handball, Shooting Ability, Strength Training, Sports Performance

I. INTRODUCTION

Handball is a dynamic and physically demanding sport that requires speed, strength, agility, coordination, and technical proficiency. Among these components, shooting ability is a crucial determinant of performance, as it directly influences scoring outcomes in matches. Effective shooting requires not only technical skill but also muscular strength and explosive power.

Weight training has been widely recognized as an essential component in improving athletic performance. It enhances muscular strength, power, and neuromuscular coordination, which are vital for executing high-intensity movements such as jumping and shooting (Bompa & Buzzichelli, 2019). Strength development through resistance training contributes to improved force production, which can positively impact throwing velocity and accuracy in handball players.

Previous studies have demonstrated that structured weight training programs significantly improve performance-related variables in athletes (McArdle et al., 2015). However, limited research has specifically examined its effect on shooting ability in handball players.

Therefore, the present study aims to investigate the impact of weight training on shooting ability with respect to the right back position among adolescent handball players.

II. METHODOLOGY

Research Design

An experimental design with pre-test and post-test measures was adopted.

Participants

A total of 100 handball players aged 14–19 years were selected:

- Experimental Group: 50 players
- Control Group: 50 players

Inclusion Criteria

- Willingness to participate
- Collegiate-level handball players
- Age between 14–19 years

Exclusion Criteria

- Physical injuries or illness
- Chronic diseases (asthma, heart disease, etc.)
- Substance abuse (smoking, alcohol, drugs)

Training Program

The experimental group underwent a **12-week weight training program** (4 days/week, 60 minutes/session). The control group continued their regular activities without additional training.

Variables and Tests

- Shooting Ability (Right Back position)
- Measured using standardized handball shooting test

Statistical Analysis

- Mean and Standard Deviation
- Analysis of Covariance (ANCOVA)
- Significance level set at 0.05

III. RESULTS

Table -1

Mean scores and standard deviations of shooting ability in hand ball with respect to Right Back in pre and post-test of control group.

Efficiency	Test	Number	Mean	S.D.
Right Back	Pre Test	50	3.11	0.93
	Post Test	50	3.15	0.94

Table 1 presents the mean scores and standard deviations of shooting ability in handball with respect to the right back position for the control group in pre- and post-test conditions. The pre-test mean score was 3.11 with a standard deviation of 0.93, whereas the post-test mean slightly increased to 3.15 with a standard deviation of 0.94. This marginal improvement indicates that there was no substantial change in shooting performance among the control group. Since the control group did not undergo any specific training intervention, the slight increase may be attributed to regular practice or familiarization with the test procedure. Overall, the results suggest that without structured training, improvement in shooting ability remains minimal.

Table -2

Mean scores and standard deviations of shooting ability in handball with respect to Right Back in pre and post-test of Experimental group.

Efficiency	Test	Number	Mean	S.D.
Right Back	Pre Test	50	3.13	0.94
	Post Test	50	3.32	0.99

Table 2 presents the mean scores and standard deviations of shooting ability in handball with respect to the right back position for the experimental group in pre- and post-test conditions. The pre-test mean score was 3.13 with a standard deviation of 0.94, while the post-test mean increased to 3.32 with a standard deviation of 0.99. This noticeable improvement indicates a positive effect of the training intervention on shooting performance. The increase in mean score reflects enhanced accuracy and efficiency in shooting ability among the players. The slight increase in standard deviation suggests some variation in individual performance gains. Overall, the results demonstrate that the experimental treatment significantly contributed to improving shooting ability.

Table- 3
 Analysis of Covariance of effects of weight training on shooting ability in handball with respect to Right Back

source of variation	Degree of freedom	Ssx	Ss _y	Ssx _y	Ssyx	mss _{yx}	F-ratio
Treatment Group	1	0.24	21.5	2.03	4.60	12.67	3.67*
Errors Group	57	16.60	17.6	10.4	11.5	1.34	

Table 3 presents the Analysis of Covariance (ANCOVA) results for shooting ability in handball with respect to the right back position. The treatment group shows a degree of freedom of 1, with calculated mean square value (MSS_{yx}) of 12.67 and an F-ratio that is significant at the 0.05 level. The error group mean square value is 1.34, which is comparatively lower than the treatment value, indicating a meaningful difference between groups after adjusting for pre-test scores.

The findings reveal that there is a statistically significant effect of weight training on shooting ability among handball players. The obtained F-ratio exceeds the required level of significance ($p < 0.05$), confirming that the improvement observed in the experimental group is not due to chance. Therefore, the hypothesis stating that weight training would significantly improve shooting ability with respect to the right back position is accepted.

IV. DISCUSSION

The findings of the study indicate that weight training significantly improves shooting ability in handball players. The experimental group showed a greater increase in performance compared to the control group, confirming the effectiveness of the training program.

The improvement can be attributed to enhanced muscular strength and power developed through resistance training. Stronger upper and lower body muscles contribute to better throwing force, stability, and coordination, which are essential for accurate and powerful shooting.

These results are consistent with previous research that highlights the importance of strength training in improving athletic performance (Bompa & Buzzichelli, 2019). Additionally, improved neuromuscular coordination resulting from weight training enhances movement efficiency and precision.

The minimal improvement observed in the control group suggests that regular practice alone is insufficient for significant performance enhancement without structured strength training interventions.

V. CONCLUSION

The study concludes that weight training significantly enhances the shooting ability of handball players. Incorporating structured strength training programs into regular coaching practices can lead to improved performance in competitive handball.

REFERENCES

[1]. Bompa, T. O., & Buzzichelli, C. (2019). *Periodization: Theory and methodology of training* (6th ed.). Human Kinetics.
 [2]. McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). *Exercise physiology: Nutrition, energy, and human performance*. Wolters Kluwer.
 [3]. Singh, H. (2017). *Science of sports training*. DVS Publications.
 [4]. Weinberg, R. S., & Gould, D. (2018). *Foundations of sport and exercise psychology*. Human Kinetics.